

## RIVERS AND FLOODS

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During September minor to moderate floods occurred in the rivers of the Southeastern States, in scattered places over the Mississippi Basin, and in the Rio Grande.

Unusually heavy and general rains on September 1, over the watershed of the Big Sioux River, caused a flood, the estimated damage from which was \$322,000. This flood attracted considerable interest because of the prolonged dry spell, which has prevailed during the last 4 years. While the need for the repletion of ground water supply was badly felt, the run-off was so rapid that the soil did not absorb the rain to a very great extent and the sub-soil remained almost as deficient in moisture as before the rain.

Moderate to heavy general rains over the San Juan watershed in Mexico from the hurricanes which passed inland at Brownsville, Tex., on September 4-5 and at Tampico, Mexico, on September 15 and September 24, caused above flood stages in the Rio Grande from Rio-grande, Tex., to its mouth during the greater part of September. No lives were lost in the high waters and very little property of any kind was damaged.

As stated in the August issue of the REVIEW, a severe flood occurred in Cherry Creek near Denver, Colo. Mr. J. M. Sherier, the official in charge of the Denver, Colo., Weather Bureau office, writes as follows about this flood:

Owing to excessive rains in the eastern portion of Douglas County on the night of August 2-3, 1933, the Castlewood Dam, located on Cherry Creek about 32 miles southeast of Denver, collapsed shortly after midnight of the 3d. In the flood which resulted, the crest of which reached Denver about 7:30 a.m. of the 3d, 2 persons were drowned, hundreds of acres of fertile farm lands were ruined, scores of head of livestock were lost, and many bridges, including 6 within the city limits of Denver, were destroyed. Basements of hundreds of houses in the lower portion of Denver were flooded, and water completely filled the subway of the Union Station and reached a depth of a foot and a half in the main waiting room.

According to a recent survey by a committee of engineers, the estimated damage within the city was as follows: Residential property, \$64,147; industrial property, \$439,143; railroads, \$65,450; city of Denver, \$175,000. Outside of the city the following damages are estimated by the same committee to have resulted: Farm property, \$159,000; industrial property, \$18,550; railroads, \$8,000; bridges, \$24,500. In all 1,100 pieces of property were reported to have been involved, and the total amount of the damage is estimated to have been \$953,790.

On account of the timely warnings by the caretaker at the dam, and the action by city and county officials and telephone companies in giving the information thorough distribution, hundreds of lives undoubtedly were saved.

At the present time steps are being taken to form a conservancy district and to construct permanent safeguards against disasters of this kind. Under ordinary conditions Cherry Creek is a tiny stream that trickles and meanders through the valley above Denver, and its bed through the city itself, between concrete retaining walls, often is dry. It rises, however, in a region that is subject to violent downpours. The Indians are said to have called it "a bad actor", a reputation which it has maintained through all of the years since their time.

Table of flood stages for September 1933

[All dates in September unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Waccamaw: Conway, S.C.....	Feet 7	7	19	8.4	8
Saluda: Chappells, S.C.....	14	7	9	18.0	8
Santee:					
Rimini, S.C.....	12	1	17	15.0	10, 12
		19	24	13.1	22-33
		27	(*)	13.2	30
Ferguson, S.C.....	12	10	18	12.4	13-16
Savannah: Ellenton, S.C.....	14	9	11	14.7	10
Ogeechee: Meldrim, Ga.....	9	7	14	10.7	8
Altamaha: Everett City, Ga.....	10	10	13	10.8	11
MISSISSIPPI SYSTEM					
Missouri Basin					
Big Sioux: Akron, Iowa.....	12	3	7	17.6	5
Grand:					
Gallatin, Mo.....	20	27	28	21.3	27
Chillicothe, Mo.....	18	28	28	20.5	28
Ohio Basin					
West Fork: Anderson, Ind.....	8	27	28	9.3	28
Wabash:					
Bluffton, Ind.....	10	29	Oct. 1	11.1	29
La Fayette, Ind.....	11	29	29	11.7	29
Arkansas Basin					
Arkansas:					
Arkansas City, Kans.....	15	2	3	16.0	3
Fort Smith, Ark.....	22	5	5	22.4	5
WEST GULF OF MEXICO DRAINAGE					
Rio Grande:					
Riogrande, Tex.....	21	7	9	31.9	8
		17	18	24.5	17
		9	11	25.2	10-11
Hidalgo, Tex.....	22	19	20	22.7	19
		7	13	22.0	10-11
Mercedes, Tex.....	20	18	27	21.7	19-20
		8	15	18.7	9
Brownsville, Tex.....	18	19	29	18.4	22, 26

\* Continued into October.